

1. A method for coating an implant comprising the steps of

- (d) allowing the magnesium, calcium, and phosphate ions to precipitate onto the implant to form a coating.

3. The method of claim 1 wherein the implant is formed from one or more of metal, organic material, polymer or ceramic.

5. The method according to claim 1 wherein the calcium and phosphate ions are present in the aqueous solution in a molar ratio of between about 1.5 to about 2.5.

7. The method according to claim 1 wherein the aqueous solution comprises about 2.5 to about 25 mM calcium ions and about 1.0 to about 10 mM phosphate ions.

1 8. The method according to claim 1 wherein the  
2 aqueous solution comprises about 0.1 to about 20 mM  
3 magnesium ions.

1 9. The method according to claim 1 wherein the  
2 aqueous solution comprises about 1.5 to about 10 mM  
3 magnesium ions.

1 10. The method according to claim 1 wherein the  
2 aqueous solution comprises no carbonate ions or less than  
3 about 50 mM carbonate ions.

1 11. The method according to claim 1 wherein the  
2 aqueous solution comprises no carbonate ions or less than  
3 about 42 mM carbonate ions.

1 12. The method according to claim 1 wherein the  
2 aqueous solution comprises an ionic strength in the range  
3 of about 0.1 to about 2 M.

1 13. The method according to claim 1 wherein the  
2 aqueous solution comprises an ionic strength in the range  
3 of about 0.15 to about 1.5 M.

1 14. The method according to claim 1 wherein the  
2 gaseous weak acid is passed through the aqueous solution at  
3 a pressure of about 0.1 to about 10 bar.

1 15. The method according to claim 1 wherein the  
2 gaseous weak acid is passed through the aqueous solution at  
3 a pressure of about 0.5 to about 1.5 bar.

1 16. The method according to claim 1 wherein the  
2 aqueous solution has a temperature in the range of between  
3 about 5°C to about 80°C.

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1           18. The method according to claim 1 wherein the  
2       implant is treated by a mechanical or chemical surface  
3       treatment prior to contacting the implant with the aqueous  
4       solution.

1            20. The method of claim 18 wherein the implant is  
2 treated by contacting with strong mineral acid or an  
3 oxidizing agent in a manner to etch the implant.

22. The method of claim 1 wherein the coating comprises one or more of amorphous carbonate calcium phosphate, hydroxyapatite, calcium deficient and hydroxyl carbonate apatite, octacalcium phosphate, dicalcium phosphate dihydrate or calcium carbonate.

1           24. The method of claim 1 wherein the coating has a  
2   thickness of about 0.5 to about 50 microns.

1     ~~25. The method of claim 1 further comprising the step~~  
2     ~~of contacting a coated implant with a calcifying solution~~  
3     ~~comprising calcium and phosphate ions, and allowing a~~  
4     ~~precipitate layer of calcium and phosphate ions to form on~~  
5     ~~the coated implant.~~

1             26. A device for coating an implant comprising  
2             (a) reactor vessel;  
3             (b) heating element operatively connected to the  
4     reactor vessel;  
5             (c) implant support;  
6             (d) stirrer disposed within the reactor vessel;  
7             (f) inlet and outlet operatively connected to  
8     the reactor vessel; and  
9             (g) controlled source of carbon dioxide  
10     operatively connected to the inlet.

Added

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